



UNITED STATES DEPARTMENT OF COMMERCE

Pat nt and Trademark Office

Addr ss: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
|-----------------|-------------|----------------------|---------------------|
| 09/545,785 | 04/07/00 | SOWLATI | T US 000099 |

MM91/0809
JOHN C FOX
C/O U S PHILIPS CORPORATION
INTELLECTUAL PROPERTY DEPARTMENT
580 WHITE PLAINS ROAD
TARRYTOWN NY 10591

EXAMINER

NADAV, O

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 08/09/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/545,785

Applicant(s)
Sowlati et al.

Examiner
ORI NADAV

Art Unit
2811



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Jun 25, 2001.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

Art Unit: 2811

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "27" and "30" have both been used to designate conductive via and dielectric layer. Correction is required.
2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Figure 2B depicts dielectric layer comprising vacuum. Therefore, a silicon oxide dielectric layer must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2811

4. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ng et al. (5,583,359).

Ng et al. teach in figure 8 a capacitor 200 over a substrate 202 comprising a first level 210 of at least four electrically conductive parallel lines extending in a first direction and lying in a first plane, at least a second level 212 comprising metal or polysilicon (column 9, lines 65-66) of at least four electrically conductive parallel lines extending in the first direction and lying in a second plane above the first plane, each of the second level lines being disposed over a respective one of the first level lines, such that the lines of the first and second levels are arranged in a series of at least four coplanar line pairs, each line pair comprising one of the first level lines and a respective one of the second level lines; a dielectric layer 250 (figure 9) disposed between the first and second levels of conductive lines; a plurality of vias 230 arranged such that the first level line and the second level line of each of the at least four line pairs is connected by at least a respective one of the plurality of vias thereby forming an array of at least four parallel capacitor plates, and electrically opposing nodes forming the terminals of the capacitor, the array of parallel capacitor plates electrically connected to the opposing nodes in an alternating manner so that the plates have alternating electrical polarities (figures 10-11).

Although figure 8 of Ng et al. depicts one capacitor, the capacitor comprises plurality of parallel capacitor plates (fingers) of alternating polarity (figure 10). Therefore, Ng et al.

Art Unit: 2811

teach an array of at least four parallel capacitor plates. Thus, the claimed structure is considered to be at least obvious over Ng et al.'s structure.

Regarding claim 4, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a dielectric layer comprising silicon dioxide in Ng et al.'s device, because silicon dioxide is a conventional dielectric material, of which judicial notice may be taken.

Regarding claims 5 and 6, Ng et al. teach in figure 8 at least a third level 214 of at least four electrically conductive parallel lines extending in the first direction and lying in a third plane above the first and second planes such that each of the third level lines is coplanar with a respective one of the line pairs, and a second dielectric layer 252 (figure 9) disposed between the second and third levels of conductive lines so that the third level of lines vertically extends the array of at least four parallel capacitor plates.

Regarding claims 8-11, Ng et al. teach a capacitor being formed using known CMOS techniques (column 2, lines 56-57). Therefore, the capacitor comprises a sub-micron CMOS structure, as claimed.

Art Unit: 2811

Response to Arguments

5. Applicant argues on page 4 that reference characters "27" and "30" do not designate two different elements.

Figure 2B depicts reference character "30" designating the corner block as a conductive via. Reference character "27" points at the same corner block and designating it as a dielectric layer. Applicant alleges that the arrow of reference character "27" is pointing towards the dielectric layer. However, no dielectric layer is visible in that area.

6. Applicant argues on page 5 that Ng et al. teach a capacitor having horizontal plates, which is equivalent to forming only two parallel capacitor plates.

Although figure 8 of Ng et al. depicts one capacitor, the capacitor comprises plurality of parallel capacitor plates (fingers) of alternating polarity (figure 10).

Therefore, Ng et al. teach an array of at least four parallel capacitor plates, as claimed.

Furthermore, Ng et al. teach capacitor plates formed in the vertical direction and can be used to obtain similar capacitance in the horizontal direction (column 10, lines 31-34).

Art Unit: 2811

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

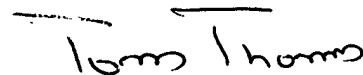
Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG

Art Unit: 2811

30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to *Examiner Nadav* whose telephone number is **(703) 308-8138**. The Examiner is in the Office generally between the hours of 7 AM to 3 PM (Eastern Standard Time) Monday through Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas, can be reached at **(703) 308-2772**.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is **308-0956**



**TOM THOMAS
SUPERVISORY PATENT EXAMINER**

Ori Nadav

August 2, 2001